

Notice of Allowability

Application No.

09/837,807

Examiner

Jonathan G. Sterrett

Applicant(s)

CLARKE, HERNAN JOSE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8-8-06.
2. ☒ The allowed claim(s) is/are 24-29.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 26061011
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Allowance

1. The following is an Allowance in response to the Amendment submitted on August 8, 2006. **Claims 24, 26 and 28** are amended. **Claims 1-23** have been previously cancelled. **Claims 24-29** are now pending in the application.

Examiner's Amendment

2. An examiner's amendment to the record is attached to the Office Action. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Robert Atkins, Reg. 34,288 on 11 October 2006. See attached interview summary.

3. The claims below represent the pending claims in the application.

1-23. (Cancelled)

24. (Amended) A computer-implemented method of production scheduling, comprising:

loading a plurality of work orders from a database, each work order containing a plurality of work cards to define a plurality of tasks associated

with the work order;

comparing the plurality of work cards for each work order to a work card template, including the steps of,

- (a) extracting the plurality of work cards from a work order;_i[,]
- (b) comparing work card identification numbers from the plurality of work cards from the work order to work card identification numbers from a plurality of work cards from the work card template;_i[,]
- (c) if matching a work card identification number from one of the plurality of work cards from the work order matches with a work card identification number from one of the plurality of work cards from the work card template, then copying production parameters for a job associated with the matching one of the plurality of work cards from the work card template to the matching one of the plurality of work cards from the work order, the production parameters including at least a work card number, description of the job, sequence of the job, temporal data related to the job, status of the job, priority of the job, milestones for the job, execution phase of the job, and man-hours needed to perform the job;_i[,]
- (d) for each matching work card, determining dependency to other work cards from the work order, the dependencies including at least start-to-start dependency, start-to-finish dependency, finish-to-start dependency, and finish-to-finish dependency;_i[,]
- (e) for each dependency found in step (d), linking the work cards found

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to be dependent;_i[,]

(f) comparing zone location of a work piece associated with the job on the work card from the work order with zone location of a work piece associated with the job on the work card from the work card template and, if found to differ, changing zone location on the work card from the work order to match zone location on the work card from the work card template;_i[,] and

(g) comparing skill of worker needed for the job on the work card from the work order with skill of worker needed for the job on the work card from the work card template and, if found to differ, changing skill of worker on the work card from the work order to match skill of worker on the work card from the work card template;_i[,]

adding work cards found in the work card template but not found in the plurality of work cards from the work order to the plurality of work cards to the work order, including the steps of,

(h) querying the database for non-routine work cards associated with the work order;_i[,]

(i) computing time for each non-routine work card associated with the work order;_i[,]

(j) inserting each non-routine work card into the plurality of work cards for the work order;_i[,]

(k) optimizing scheduling of the work order with the non-routine work cards inserted into the plurality of work cards in terms of demand and

availability of resources_i[,] and

(l) setting a baseline schedule of the work order according to the optimized schedule from step (k);

displaying the work order with table format with each row representing one of the plurality of work cards from the work order, the display including a plurality of boxes for selecting a work order, importing a work order, updating work cards within the work order, displaying non-routine work cards, modifying work cards within the work order, suspending work cards within the work order, viewing unscheduled work cards with the work order, and switching the display to graphical format;

performing the plurality of tasks on the plurality of work cards from the work order;

updating the database upon completion of each of the plurality of tasks on the plurality of work cards from the work order, including the steps of,

(m) updating non-routine work cards_i[,] and

(n) if the work card is suspended, then suspending work cards dependent upon the suspended work card;

updating the display to remove completed and suspended work cards;

performing what-if scenarios of the production schedule by revising the production parameters for the plurality of work cards from the work order, including the steps of,

(o) selecting a production parameter to revise_i[,]

- (p) selecting a time slot in the production schedule_i[,]
- (q) determining resources needed to meet revised production parameters_i[,]
- (r) comparing resources needed to meet revised production parameters with available resources_i[,]
- (s) repeating steps (p) through (r) for each time slot in the production schedule_i[,]
- (t) repeating steps (o) through (s) for each production parameter to be considered_i[,]
- (u) recording each what-if scenario in the database_i[,] and
- (v) determining an optimal production schedule by finding which what-if scenario provides maximum usage of the available resources; and scheduling the work order according to the optimal production schedule, including the steps of,
- (w) determining start date of the work order by calculating earliest start and completion dates and latest start and completion dates for each of the plurality of work cards from the work order_i[,] and
- (x) determining end date of the work order by calculating elapsed time for each of the plurality of work cards from the work order, including a critical path for a longest time through the plurality of work cards from the work order_i;
and
- (y) displaying the production schedule.

25. (Amended) The computer-implemented method of claim 24, further including the step of providing a graphical user interface (GUI) to the production scheduling process for a user.

26. (Amended) A computer system for executing a production schedule, comprising:

means for loading a plurality of work orders from a database, each work order containing a plurality of work cards to define a plurality of tasks associated with the work order;

means for comparing the plurality of work cards for each work order to a work card template, including,

(a) extracting the plurality of work cards from a work order_i[,]

(b) comparing work card identification numbers from the plurality of work cards from the work order to work card identification numbers from a plurality of work cards from the work card template_i[,]

(c) if matching a work card identification number from one of the plurality of work cards from the work order ~~matches~~ with a work card identification number from one of the plurality of work cards from the work card template, then copying production parameters for a job associated with the matching one of the plurality of work cards from the work card template to the matching one of the plurality of work cards from the work order, the production parameters including at least a work card number, description of the job, sequence of the job, temporal data related to the job, status of the job, priority of the job,

milestones for the job, execution phase of the job, and man-hours needed to perform the job;_i[,]

(d) for each matching work card, determining dependency to other work cards from the work order, the dependencies including at least start-to-start dependency, start-to-finish dependency, finish-to-start dependency, and finish-to-finish dependency;_i[,]

(e) for each dependency found in step (d), linking the work cards found to be dependent;_i[,]

(f) comparing zone location of a work piece associated with the job on the work card from the work order with zone location of a work piece associated with the job on the work card from the work card template and, if found to differ, changing zone location on the work card from the work order to match zone location on the work card from the work card template;_i[,] and

(g) comparing skill of worker needed for the job on the work card from the work order with skill of worker needed for the job on the work card from the work card template and, if found to differ, changing skill of worker on the work card from the work order to match skill of worker on the work card from the work card template;

means for adding work cards found in the work card template but not found in the plurality of work cards from the work order to the plurality of work cards to the work order, including the steps of,

(h) querying the database for non-routine work cards associated with the

work order;_i[,]

(i) computing time for each non-routine work card associated with the

work order;_i[,]

(j) inserting each non-routine work card into the plurality of work

cards for the work order;_i[,]

(k) optimizing scheduling of the work order with the non-routine work cards inserted into the plurality of work cards in terms of demand and availability of resources;_i[,] and

(l) setting a baseline schedule of the work order according to the optimized schedule from step (k);

means for displaying the work order with table format with each row representing one of the plurality of work cards from

the work order, the display including a plurality of boxes for selecting a work order, importing a work order, updating work cards within the work order,

displaying non-routine work cards, modifying work cards within the work order, suspending work cards within the work order, viewing unscheduled work cards

with the work order, and switching the display to graphical format;

means for performing the plurality of tasks on the plurality of work cards from the work order;

means for updating the database upon completion of each of the plurality of tasks on the plurality of work cards from the work order, including the steps of,

- (m) updating non-routine work cards_{i[,]} and
- (n) if the work card is suspended, then suspending work cards dependent upon the suspended work card;
means for updating the display to remove completed and suspended work cards;
means for performing what-if scenarios of the production schedule by revising the production parameters for the plurality of work cards from the work order, including the steps of,
 - (o) selecting a production parameter to revise_{i[,]}
 - (p) selecting a time slot in the production schedule_{i[,]}
 - (q) determining resources needed to meet revised production parameters_{i[,]}
 - (r) comparing resources needed to meet revised production parameters with available resources_{i[,]}
 - (s) repeating steps (p) through (r) for each time slot in the production schedule_{i[,]}
 - (t) repeating steps (o) through (s) for each production parameter to be considered_{i[,]}
 - (u) recording each what-if scenario in the database_{i[,]} and
 - (v) determining an optimal production schedule by finding which what-if scenario provides maximum usage of the available resources; and
means for scheduling the work order according to the optimal

production schedule, including the steps of,

(w) determining start date of the work order by calculating earliest start and completion dates and latest start and completion dates for each of the plurality of work cards from the work order_i[,] and

(x) determining end date of the work order by calculating elapsed time for each of the plurality of work cards from the work order, including a critical path for a longest time through the plurality of work cards from the work order[.];
and

(y) displaying the production schedule.

27. (Amended) The computer system of claim 26, further including means for providing a graphical user interface (GUI) to the production scheduling process for a user.

28. (Amended) A computer program product usable with a programmable computer processor having a computer readable program code embodied therein, comprising:

computer readable program code which loads a plurality of work orders from a database, each work order containing a plurality of work cards to define a plurality of tasks associated with the work order;

computer readable program code which compares the plurality of work cards for each work order to a work card template, including the steps of,

- (a) extracting the plurality of work cards from a work order;_i[,]
- (b) comparing work card identification numbers from the plurality of work cards from the work order to work card identification numbers from a plurality of work cards from the work card template;_i[,]
- (c) if matching a work card identification number from one of the plurality of work cards from the work order ~~matches~~ with a work card identification number from one of the plurality of work cards from the work card template, then copying production parameters for a job associated with the matching one of the plurality of work cards from the work card template to the matching one of the plurality of work cards from the work order, the production parameters including at least a work card number, description of the job, sequence of the job, temporal data related to the job, status of the job, priority of the job, milestones for the job, execution phase of the job, and man-hours needed to perform the job;_i[,]
- (d) for each matching work card, determining dependency to other work cards from the work order, the dependencies including at least start-to-start dependency, start-to-finish dependency, finish-to-start dependency, and finish-to-finish dependency;_i[,]
- (e) for each dependency found in step (d), linking the work cards found to be dependent;_i[,]
- (f) comparing zone location of a work piece associated with the job on the work card from the work order with zone location of a work piece

associated with the job on the work card from the work card template and, if found to differ, changing zone location on the work card from the work order to match zone location on the work card from the work card template;_i[,] and

(g) comparing skill of worker needed for the job on the work card from the work order with skill of worker needed for the job on the work card from the work card template and, if found to differ, changing skill of worker on the work card from the work order to match skill of worker on the work card from the work card template;

computer readable program code which adds work cards found in the work card template but not found in the plurality of work cards from the work order to the plurality of work cards to the work order, including the steps of,

(h) querying the database for non-routine work cards associated with the work order;_i[,]

(i) computing time for each non-routine work card associated with the work order;_i[,]

(j) inserting each non-routine work card into the plurality of work cards for the work order;_i[,]

(k) optimizing scheduling of the work order with the non-routine work cards inserted into the plurality of work cards in terms of demand and availability of resources;_i[,] and

(l) setting a baseline schedule of the work order according to the

optimized schedule from step (k);

computer readable program code which displays the work order with table format with each row representing one of the plurality of work cards from the work order, the display including a plurality of boxes for selecting a work order, importing a work order, updating work cards within the work order, displaying non-routine work cards, modifying work cards within the work order, suspending work cards within the work order, viewing unscheduled work cards with the work order, and switching the display to graphical format;

computer readable program code which performs the plurality of tasks on the plurality of work cards from the work order;

computer readable program code which updates the database upon completion of each of the plurality of tasks on the plurality of work cards from the work order, including the steps of,

(m) updating non-routine work cards;[,] and

(n) if the work card is suspended, then suspending work cards dependent upon the suspended work card;

computer readable program code which updates the display to remove completed and suspended work cards;

computer readable program code which performs what-if scenarios of the production schedule by revising the production parameters for the plurality of work cards from the work order, including the steps of,

- (o) selecting a production parameter to revise_i[,]
- (p) selecting a time slot in the production schedule_i[,]
- (q) determining resources needed to meet revised production parameters_i[,]
- (r) comparing resources needed to meet revised production parameters with available resources_i[,]
- (s) repeating steps (p) through (r) for each time slot in the production schedule_i[,]
- (t) repeating steps (o) through (s) for each production parameter to be considered_i[,]
- (u) recording each what-if scenario in the database_i[,] an
- (v) determining an optimal production schedule by finding which what-if scenario provides maximum usage of the available resources; and computer readable program code which schedules the work order according to the optimal production schedule, including the steps of,
- (w) determining start date of the work order by calculating earliest start and completion dates and latest start and completion dates for each of the plurality of work cards from the work order_i[,] and
- (x) determining end date of the work order by calculating elapsed time for each of the plurality of work cards from the work order, including a critical path for a longest time through the plurality of work cards from the work order[.];
and

- (y) displaying the production schedule.

29. (Amended) The computer program product of claim 28, further including the step of providing a graphical user interface (GUI) to the production scheduling process for a user.

Allowable Subject Matter

4. **Claims 24-29** are allowed.

Reasons for Allowance

5. The following is a statement of reasons for the indication of allowable subject matter:

None of the prior art of record, taken individually or in any combination, teach, inter alia,

loading a plurality of work orders from a database, each work order containing a plurality of work cards to define a plurality of tasks associated with the work order;

comparing the plurality of work cards for each work order to a work card template, extracting the plurality of work cards from a work order;

comparing work card identification numbers from the plurality of work cards

from the work order to work card identification numbers from a plurality of work cards from the work card template;

matching a work card identification number from one of the plurality of work cards from the work order with a work card identification number from one of the plurality of work cards from the work card template, then copying production parameters for a job associated with the matching one of the plurality of work cards from the work card template to the matching one of the plurality of work cards from the work order, the production parameters including at least a work card number, description of the job, sequence of the job, temporal data related to the job, status of the job, priority of the job, milestones for the job, execution phase of the job, and man-hours needed to perform the job;

for each matching work card, determining dependency to other work cards from the work order, the dependencies including at least start-to-start dependency, start-to-finish dependency, finish-to-start dependency, and finish-to-finish dependency;

for each dependency found, linking the work cards found to be dependent;

comparing zone location of a work piece associated with the job on the work card from the work order with zone location of a work piece associated with the job on the work card from the work card template and, if found to differ, changing zone location on the work card from the work order to match zone location on the work card from the work card template; and

comparing skill of worker needed for the job on the work card from the work

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order with skill of worker needed for the job on the work card from the work card template and, if found to differ, changing skill of worker on the work card from the work order to match skill of worker on the work card from the work card template;

adding work cards found in the work card template but not found in the plurality of work cards from the work order to the plurality of work cards to the work order, including the steps of,

querying the database for non-routine work cards associated with the work order;

computing time for each non-routine work card associated with the work order;

inserting each non-routine work card into the plurality of work cards for the work order;

optimizing scheduling of the work order with the non-routine work cards inserted into the plurality of work cards in terms of demand and availability of resources; and

setting a baseline schedule of the work order according to the optimized schedule;

displaying the work order with table format with each row representing one of the plurality of work cards from the work order, the display including a plurality of boxes for selecting a work order, importing a work order, updating work cards within the work order, displaying non-routine work cards, modifying work cards within the work order, suspending work cards within the work order, viewing unscheduled work

cards with the work order, and switching the display to graphical format;

performing the plurality of tasks on the plurality of work cards from the work order;

updating the database upon completion of each of the plurality of tasks on the plurality of work cards from the work order, including the steps of,

updating non-routine work cards; and if the work card is suspended, then suspending work cards dependent upon the suspended work card;

updating the display to remove completed and suspended work cards;

performing what-if scenarios of the production schedule by revising the production parameters for the plurality of work cards from the work order, including the steps of,

selecting a production parameter to revise;

selecting a time slot in the production schedule;

determining resources needed to meet revised production parameters;

comparing resources needed to meet revised production parameters with available resources; and repeating these steps for each time slot in the production schedule and for each production parameter to be considered;

recording each what-if scenario in the database; and determining an optimal production schedule by finding which what-if scenario provides maximum usage of the available resources; and scheduling the work order according to the optimal production schedule, including the steps of,

determining start date of the work order by calculating earliest start and completion dates and latest start and completion dates for each of the plurality of work cards from the work order; and

determining end date of the work order by calculating elapsed time for each of the plurality of work cards from the work order, including a critical path for a longest time through the plurality of work cards from the work order;
displaying the production schedule.

as recited in independent **Claims 24, 26 and 28**.

The novelty of the invention is in the combination of the limitations cited in independent **Claims 24, 26 and 28** and not in any specific individual claim limitation.

The prior art reference most closely resembling the applicants claimed invention is **Rush US 6,119,102** (hereinafter **Rush**). Rush discloses some of the features of the claimed invention, as discussed below. For those features missing from Rush, an unreasonable number of references would be required, so that a person of ordinary skill in the art at the time of the invention would not have been motivated to combine Rush with the required references. Therefore a combination of these features was not reasonably found in the prior art.

While **Rush** discloses:

loading a plurality of work orders from a database, each work order

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containing a plurality of work cards to define a plurality of tasks associated with the work order;

matching a work card identification number from each work card with a work card identification number with the template, then copying production parameters for a job associated with the matching one of the plurality of work cards from the work card template to the matching one of the plurality of work cards from the work order,

for each matching work card, determining dependency to other work cards from the work order and for each dependency found, linking the work cards found to be dependent;

optimizing scheduling of the work order with the non-routine work cards inserted into the plurality of work cards in terms of demand and availability of resources; and

setting a baseline schedule of the work order according to the optimized schedule;

displaying the work order with table format with each row representing one of the plurality of work cards from the work order;

performing the plurality of tasks on the plurality of work cards from the work order;

updating the database upon completion of each of the plurality of tasks on the plurality of work cards from the work order

determining start date of the work order by calculating earliest start and completion dates and latest start and completion dates for each of the plurality of

work cards from the work order; and

determining end date of the work order by calculating elapsed time for each of the plurality of work cards from the work order, including a critical path for a longest time through the plurality of work cards from the work order;

and displaying the production schedule.

However, **Rush** fails to disclose:

the production parameters including at least a work card number, description of the job, sequence of the job, temporal data related to the job, status of the job, priority of the job, milestones for the job, execution phase of the job, and man-hours needed to perform the job;

comparing zone location of a work piece associated with the job on the work card from the work order with the template to correct the work card; and

comparing skill of worker needed for the job on the work card from the work order with the template to correct the skill of the worker on the work card;

adding non routine work cards from the database to the work order where these cards are found in the work card template but not found in the work cards from the work order;

the display including a plurality of boxes for selecting a work order, importing a work order, updating work cards within the work order, displaying non-routine work cards, modifying work cards within the work order, suspending work cards within the work order, viewing unscheduled work cards with the work order, and switching the

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display to graphical format;

updating the database upon completion of each of the plurality of tasks on the plurality of work cards from the work order, including the steps of,

updating non-routine work cards; and if the work card is suspended, then suspending work cards dependent upon the suspended work card;

updating the display to remove completed and suspended work cards;

performing what-if scenarios of the production schedule by revising the production parameters for the plurality of work cards from the work order,

recording each what-if scenario in the database; and determining an optimal production schedule by finding which what-if scenario provides maximum usage of the available resources; and scheduling the work order according to the optimal production schedule,

as recited in **Claims 24, 26 and 28**.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to

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applicant's disclosure.

JP 10000539 A by Oyama discloses a production scheduling system.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G. Sterrett whose telephone number is 571-272-6881. The examiner can normally be reached on 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JGS JGS
10-11-2006.

Michelle Tarai
Michelle Tarai
Patent Examiner
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